Crustaceans

Wadden Sea

The definition of crustaceans, according to Collins dictionary, is: “A crustacean is an animal with a hard shell and several pairs of legs, which usually lives in water. Crabs, lobsters, and shrimps are crustaceans.” (Collins Dictionary, n.d.). Crustaceans are known to feed on a variety of different food sources, such as detritus, spat (bivalve eggs floating in the water) and other prey animals (Van der Veer et al., 1987; Van der Veer et al., 1998; Jung et al., 2017). Additionally, cannibalism occurs frequently among crustaceans (Ocampo et al., 2018). In order forage for their food, crustaceans migrate from area to find potential meals (Van der Veer et al., 1987; Van der Veer et al., 1998; Jung et al., 2017). Species of crustacea that are known to inhabit the Wadden Sea are: Shore crab (*Carcinus maenas*), and Brown shrimp (*Crangon crangon*) (Ocampo et al., 2018; Lotze, 2005).

History/ Population trends

Crustacean populations in the Wadden Sea have fluctuated over the years but have increased in recent years (Jung et al., 2017). According to Jung et al., this is because of changes in predator−prey interactions following concurrent changes in predatory epibenthic fish and crustaceans as well as their prey, macrozoobenthic bivalves and polychaetes, in the western Wadden Sea (2017). Jung et al. continues by denoting that these changes mainly occurred because of invasive species that have started to out compete other prey species of the crustaceans (2017).

Crustaceans have historic importance to human civilization on the Wadden Sea. Since the end of the 19th century Dutch shrimp fishing grew exponentially on the Wadden Sea (Garnalenvissers Geschiedenis, n.d.). However, in more recent year the shrimp fisheries have been subject to debate as the Wadden Sea is officially part of Natura2000 areas, as well as part of the UNESCO World Heritage Sites (Tulp et al., 2019; Garnalenvissers Geschiedenis, n.d.).

Miscellaneous

- Taxonomically speaking, orders such as: *Hymenoptra* (wasps and ants) and *Coleoptera* (beetles), are technically part of the Crustacea-branch (Boumans, 2008).
- The two largest crustaceans in the world are the American lobster (*Homarus americanus*) and the Giant spider crab (*Macrocheira kaempferi*) (Le Blanc, 2007). The American lobster can reach a body length of 1m and the Giant spider crab can reach a claw span of up to 3m.
- Gittenberger et al. found a total of ten crustacean species in the Wadden Sea that are of non-native or unknown origin (2015).

Diet

- Decaying organic matter (Mao et al., 2015; Ocampo et al., 2018)
- Barnacles (Mao et al., 2015; Ocampo et al., 2018)
- Oysters (Mao et al., 2015; Ocampo et al., 2018)
- Mussels (Mao et al., 2015; Ocampo et al., 2018)
- Other bivalves (Mao et al., 2015; Ocampo et al., 2018)
- Other detritivores (Mao et al., 2015; Ocampo et al., 2018)
- Cannibalism (Mao et al., 2015; Ocampo et al., 2018)
- Annelida (Mao et al., 2015; Ocampo et al., 2018)
- Zooplankton (Mao et al., 2015; Ocampo et al., 2018)
- Phytoplankton (Mao et al., 2015; Ocampo et al., 2018)

Sources

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